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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,141	02/03/2004	Heon Lee	4366-040241	1895
28289	7590	03/10/2006	EXAMINER	
THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219			BUDD, PAUL A	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 03/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/772,141

Applicant(s)

LEE, HEON

Examiner

Paul A. Budd

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-19, 21, 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/20/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims **1-25** are pending in this application. Claims **1-19, 21, 24** and **25** are cancelled and claims **20, 22** and **23** are amended, supported by the specification, and pending. The examiner accepts the amendments to the applicants' specification and drawings. The examiner agrees that the amended claims **20, 22-23** cannot be rejected by either the Zahorik reference (US Pat. Pub. 2002/0006735) or the Horii reference (US Pat. Pub. 2003/0209746). The 112(2nd) rejections to previous claims no longer apply to the pending claims **20, 22-23**.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **20,22-23** are rejected under 35 U.S.C. 102(b) as being anticipated by Reinberg (US Patent 5,920,788).

Regarding claim **20**, Reinberg teaches a phase-change memory device [FIG. 2] comprising:

- (a) a lower dielectric layer [FIG. 2, 35];
- (b) a lower phase-change resistor [FIG. 2, 65; column 4, lines 8-10], at least a part [see FIG. 2, 35 against 65 in the x and y directions] of the lateral surface of the lower phase-change resistor [65] being surrounded by the lower dielectric layer [column 3, lines 59-60; 35];
- (c) a dielectric layer [35] covering at least a part of the top surface [see FIG. 2] of the lower phase-change resistor [65] and including a pore [column 4, lines 20-22; 70] having smaller area [see FIG. 2] than the top surface of the lower phase-change resistor [65]; and
- (d) an upper phase-change resistor [FIG. 2, 75; column 4 lines 26-33] filling the pore [70] extending to cover at least a part [See FIG. 2] of the top surface of the dielectric layer [35] and contacting with the lower phase-change resistor [65] through the pore [70; column 5 lines 22-55].

Regarding claim **22**, Reinberg teaches the phase-change memory device [FIG. 2] as set forth in claim **20** wherein the pore is aligned [see FIG. 2; column 4 lines 11-19] to the top surface of the lower phase-change resistor [65].

Regarding claim **22**, Reinberg teaches the phase-change memory device [FIG. 2] comprising:

(a) a lower phase-change resistor [FIG. 2, 65; column 4, lines 8-10], at least a part [see FIG. 2, 35 against 65 in the x and y directions] of the lateral surface of the lower phase-change resistor [65] being surrounded by a lower dielectric layer [column 3, lines 59-60; 35];

(b) a dielectric layer [35] covering at least a part of the top surface [see FIG. 2] of the lower phase-change resistor [65] and including a pore [70] aligned [see FIG. 2; column 4 lines 11-19] to the top surface of the lower phase-change resistor [65] the pore [70] having smaller area than the top surface of the lower phase-change resistor [see FIG. 2], and

(c) an upper phase-change resistor [FIG. 2, 75] filling the pore [70], extending to cover at least a part [see FIG. 2] of the top surface of the dielectric layer [35] and contacting with the lower phase-change resistor [65] through the pore [70].

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

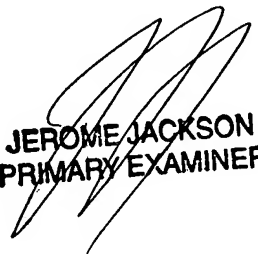
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Bez et al. (US Pat. Pub. 2003/0219924).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Budd whose telephone number 571-272-8796. The examiner can normally be reached on Monday to Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JEROME JACKSON
PRIMARY EXAMINER